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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/817,833	03/26/2001	Kazuhiko Yukawa	15162/03380	7882

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EXAMINER

NGUYEN, LUONG TRUNG

ART UNIT	PAPER NUMBER
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2612

DATE MAILED: 04/22/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No. 09/817,833	Applicant(s) YUKAWA ET AL.	
	Examiner LUONG T NGUYEN	Art Unit 2612	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 18 October 2004.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-20 is/are pending in the application.
- 4a) Of the above claim(s) 6-18 and 20 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-5 and 19 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 26 March 2001 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date <u>3/26/01; 1/11/05</u> . | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

1. It is noted that this application has been transferred to Examiner Luong T. Nguyen.

Election/Restrictions

2. Applicant's election without traverse of Group I reads on claims 1-5 and 19 in the reply filed on 10/18/2004 is acknowledged.

3. Claims 6-18 and 20 are withdrawn from further consideration pursuant to 37 CFR 1.142(b) as being drawn to a nonelected invention, there being no allowable generic or linking claim. Election was made **without** traverse in the reply filed on 10/18/2004.

Priority

4. Receipt is acknowledged of papers submitted under 35 U.S.C. 119(a)-(d), which papers have been placed of record in the file.

Specification

5. The title of the invention is not descriptive. A new title is required that is clearly indicative of the invention to which the claims are directed.

The following title is suggested:

AN AUTOFOCUS TECHNIQUE FOR A DIGITAL CAMERA.

Claim Rejections - 35 USC § 102

6. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

7. Claims 1, 3-5, 19 are rejected under 35 U.S.C. 102(b) as being anticipated by Komiya (U. S. Patent No. 5,115,262).

Regarding claim 1, Komiya discloses a digital camera comprising:

an imaging device (CCD 2, Figure 1, Column 1, Lines 40-60) including a two-dimensional array of pixels for receiving an optical image of a subject to generate an image signal;

a driver (pulse motor 16, Figure 1, Column 2, Lines 20-25) for driving a taking lens (photographing optical system 1, Figure 1, Column 1, Lines 35-45) in steps each producing movement of said taking lens through a distance greater than a depth of field;

a calculator for calculating an evaluation value based on the image signal obtained from said imaging device in each position to which said taking lens is driven (band-pass filter 9 extracts an image signal component of a specific frequency band and supplies the image signal to gate 8, then gate 8 extracts only a signal component associated with a target in-focus region, the signal is supplied to digital integrator 11 to output a focus signal value (evaluation value) to microprocessor 7, Figure 1, Column 1, Line 62 through Column 2, Line 25);

processor for performing an interpolation process upon a plurality of evaluation values obtained in respective positions to which said taking lens is driven to determine an in-focus

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position of said taking lens (microprocessor 7 performs an interpolation processing upon a plurality of focus signal $f(x)$ obtained in respective positions to which the photographing optical system 1 is moved to the in-focus point α (Figures 1-3, Column 2, Line 52 through Column 3, Line 10);

a controller (microprocessor 7 and motor driving circuit 15, Figure 1, Column 2, Lines 15-25) for controlling said driver to drive said taking lens to said in-focus position, based on a processing result from said processor.

Regarding claim 3, Komiya discloses wherein said interpolation process is performed based on evaluation values prior to and after a maximum evaluation value (the interpolation process is performed based on focus signal value at point P1 (prior to a maximum value) and point P2 (after the maximum value, Figure 3, Column 2, Line 55 through Column 3, Line 5).

Regarding claim 4, Komiya discloses wherein said interpolation process determines said in-focus position by a steep inclination extension method (microprocessor 7 performs an interpolation process based on inclination extension method upon the focus signal values at points P0, P1, P2, Column 2, Lines 55-67, Figure 3).

Regarding claim 5, Komiya discloses wherein said evaluation value includes contrast (specific frequency component extracted by band-pass filter 5, Figure 1, Column 1, Lines 62-65) of said image signal.

Regarding claim 19, Komiya discloses a method of controlling autofocus, comprising the steps of:

receiving an optical image of a subject at an imaging device including a two-dimensional array of pixels to generate an image signal (CCD 2, Figure 1, Column 1, Lines 40-60);

driving a taking lens in steps each producing movement of said taking lens through a distance greater than a depth of field (pulse motor 16 drives photographing optical system 1 to the in-focus position, Figure 1, Column 1, Lines 35-45, Column 2, Lines 20-25);

calculating an evaluation value based on the image signal obtained from said imaging device in each position to which said taking lens is driven (band-pass filter 9 extracts an image signal component of a specific frequency band and supplies the image signal to gate 8, then gate 8 extracts only a signal component associated with a target in-focus region, the signal is supplied to digital integrator 11 to output a focus signal value (evaluation value) to microprocessor 7, Figure 1, Column 1, Line 62 through Column 2, Line 25);

performing an interpolation process upon a plurality of evaluation values obtained in respective positions to which said taking lens is driven to determine an in-focus position of said taking lens (microprocessor 7 performs an interpolation processing upon a plurality of focus signal $f(x)$ obtained in respective positions to which the photographing optical system 1 is moved to the in-focus point α (Figures 1-3, Column 2, Line 52 through Column 3, Line 10));

driving said taking lens to said determined in-focus position (microprocessor 7 send a driving control signal to motor driving circuit 15 for moving the photographing optical system 1 to in-focus position, Figures 1-2, Column 2, Lines 15-25).

Claim Rejections - 35 USC § 103

8. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

9. Claim 2 is rejected under 35 U.S.C. 103(a) as being unpatentable over Komiya (U. S. Patent No. 5,115,262) in view of Hirao et al. (U. S. Patent No. 5,077,613).

Regarding claim 2, Komiya fails to specifically disclose wherein said driver drives said taking lens in steps each producing movement of said taking lens through a smaller distance than said distance near said in-focus position. However, Hirao et al. teaches a video camera with automatic focusing function, which comprises a stepping motor 9 for driving the group focusing lens 1-4 to in-focus position; if the difference of focus value at the region near the focused point is small, the driving speed of stepping motor is set to a small value (namely, the number of pulses per unit time of the clock signal Ck is small), this means that the group focusing lens 1-4 moves a smaller distance at the region near the in-focus position (Figures 1-2, Column 4, Lines 40-46). Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the device in Komiya by the teaching of Hirao et al. in order to provide a video camera which is simple in structure and automatically focusable always at a high level of accuracy under various conditions of an object (Column 1, Lines 43-46).

Conclusion

10. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

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Nagasaki et al. (U. S. Patent No. 5,083,150) discloses automatic focusing apparatus.

Suda (U. S. Patent No. 5,842,059) discloses automatic focus adjusting device.

Kobayashi (U. S. Patent No. 6,094,223) discloses automatic focusing device.

Ito (U. S. Patent No. 6,362,852) discloses focus control apparatus and method for use with a video camera or the like.

11. Any inquiry concerning this communication or earlier communications from the examiner should be directed to LUONG T NGUYEN whose telephone number is (571) 272 - 7315. The examiner can normally be reached on 7:30AM - 5:00PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Wendy Garber can be reached on (571) 272 -7308. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

LN
4/18/05



LUONG T. NGUYEN
PATENT EXAMINER